With $\hat{\rho}_i = \frac{1}{2}(\hat{I} + r_x \hat{\sigma}_x + r_y \hat{\sigma}_y + r_z \hat{\sigma}_z)$, $\hat{\rho}_i = \frac{1}{2}\begin{pmatrix} 1+r_z & r_x - i r_y \\ r_x + i r_y & 1-r_z \end{pmatrix}$

$\langle \sigma_i \rangle = \mathrm{Tr}(\hat{\rho}\hat{\sigma}_i)$

#1: Model $\hat{\rho}_f$ for phase flip : $\hat{\rho}_f = (1-\lambda)\hat{\rho}_i + \lambda \hat{\sigma}_z \hat{\rho}_i \hat{\sigma}_z$ and calculate $\langle \sigma_{xf} \rangle, \langle \sigma_{yf} \rangle, \langle \sigma_{zf} \rangle$

#2: Model $\hat{\rho}_f$ for depolarizing channel : $\hat{\rho}_f = \frac{(1-\lambda)}{2} \mathrm{Tr}[\hat{\rho}_i]\hat{I} + \hat{\rho}_i$ and calculate $\langle \sigma_{xf} \rangle, \langle \sigma_{yf} \rangle, \langle \sigma_{zf} \rangle$